WO02070088

Publication Title:

SYSTEM AND METHOD FOR TRANSMISSION OF PREDEFINED MESSAGES AMONG WIRELESS TERMINALS, AND A WIRELESS TERMINAL

Abstract:

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This Patent PDF Generated by Patent Fetcher(TM), a service of Patent Logistics, LLC

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
12 September 2002 (12.09.2002)

PCT

(10) International Publication Number
WO 02/070088 A1

(51) International Patent Classification[7]: A63F 13/00

(21) International Application Number: PCT/IB02/00646

(22) International Filing Date: 5 March 2002 (05.03.2002)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
09/800,772 7 March 2001 (07.03.2001) US

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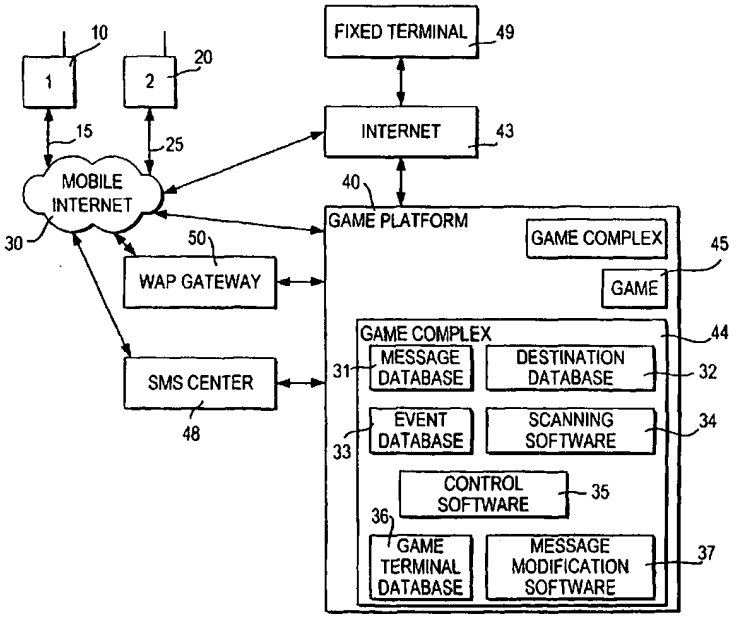
(81) Designated States *(national)*: AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR, CU, CZ, DE, DK, DM, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, NO, NZ, OM, PH, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, UZ, VN, YU, ZA, ZM, ZW.

(84) Designated States *(regional)*: ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:
— *with international search report*

[Continued on next page]

(54) Title: SYSTEM AND METHOD FOR TRANSMISSION OF PREDEFINED MESSAGES AMONG WIRELESS TERMINALS, AND A WIRELESS TERMINAL



(57) Abstract: A system and method for mobile terminal (10) users to communicate with each other. Messages to be sent between users are predefined either by a user or at the system level and are related by subject matter to an on-line service to which the user is connected. These messages can then be easily at the user's request to another mobile terminal user.

WO 02/070088 A1

— *before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments*

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System and Method For Transmission of Predefined Messages Among Wireless Terminals, and a Wireless Terminal

BACKGROUND OF THE INVENTION

1. Field of the Invention

This invention relates to a system and method of communicating over a wireless network between users of wireless terminals using predefined messages.

2. Description of the Related Art

Predefined messages are, for purposes of the present invention, defined as electronic messages whose contents are predefined and stored in a database or other file of messages for sending any number of times by one user to another user at a later time. In contrast, a message that is not predefined is generally created by a user at substantially the time it is to be sent and is intended to be sent only once. It is advantageous to predefine messages when the same content is to be sent multiple times to one or many recipients so that it is unnecessary to repeatedly recreate the content of those messages. Sending predefined messages also reduces the load placed on the network by the sending of messages because the sender must only send a predefined command, rather than a textual message, and the network only has to recognize and process the known command by selecting which predefined message to send and to whom to send it.

PC-based games that are played online over a network such as the Internet sometimes permit the sending of predefined messages relating to the games. In gaming applications, predefined messages comprise mostly voice and text messages that are selected from a menu of messages and sent from one player to another to communicate the sender's sentiments. These predefined messages can be

automated to be sent automatically upon the occurrence of a particular event. The predefined messages on the game or game system allow players to communicate more effectively and make the communication more amusing.

As the use of mobile (including wireless) terminals becomes ubiquitous, it is desirable to be able to send messages between users, including players of online games that are played over a network using mobile terminals. Sending messages on mobile terminals though presents unique challenges. It is often difficult for a user to define a message to be sent while playing a game because the game often fills the entire relatively small display on the mobile terminal, and using a portion of the display to prepare a message to be sent will cover a substantial portion, if not all, of the game screen, making it difficult or impossible to see the game while communicating. If a user is engaged in another on-line activity, it may be inconvenient or difficult to enter a custom tailored message using the mobile terminal for transmission to one or more other users. Moreover, there is a dearth of simple input devices for mobile terminals, compared to the large variety of input means available on PC's including, most commonly, keyboards, mice, joysticks, and any number of specialized input devices. Mobile phones, for example, usually only have numeric keypads and possibly a few special feature buttons that can be used to enter messages. Entering messages by typing on a mobile phone keypad with its limited number of keys can be a slow process and can interrupt the game or other on-going activity. Therefore, it is challenging to find a simplified means for users of a mobile phone to communicate before, during, or after the playing of a game or other on-line activity.

Certain business-oriented commercial applications that operate over wireless networks likewise use predefined messages at times. However, none of these applications have applied the use of predefined messages to games played by multiple players over a mobile network.

SUMMARY OF THE INVENTION

The present invention discloses a system and method of communication between users over a wireless network using predefined messages. The wireless device is not limited to any present navigation structure, and provides the ability to remotely access networked game services and other on-line services, such as on-line programs, the Internet, streaming video and audio, etc.

A first embodiment of the invention is directed to an online gaming system for playing games comprising at least one wireless terminal adapted to run a game to be played with at least one of another wireless terminal and a game platform running the game. The online gaming system comprises a game program for providing at least one game-related predefined message based on a predefined game-related criteria. The predefined message is sent to at least one of a plurality of preselected destination addresses taking into consideration terminal capabilities of the preselected destination addresses and is subject to interaction with a user of the at least one wireless terminal.

A second embodiment of the invention is directed to an online gaming system for playing games comprising at least one wireless terminal adapted to run a game to be played with at least one of another terminal and a game platform running the game, a processor within the at least one wireless terminal for controlling functions relating to the game, a storage device in communication with the processor, and a game program. The game program is operative on at least one of

the processor of the wireless terminal and at the game platform for maintaining in the storage device a database identifying at least one set of predefined messages available to send to at least one of a plurality of preselected destination addresses, for scanning game-related events to identify conditions matching any of at least one predefined game-related criteria, and for providing, based on any of the predefined game-related criteria, at least one game-related predefined message when at least one of the conditions matching any of the at least one predefined game-related criteria is identified. The at least one predefined message is sent to the at least one of a plurality of preselected destination addresses taking into consideration terminal capabilities of the preselected destination addresses and is subject to interaction with a user of the at least one wireless terminal.

A third embodiment of the invention is directed to a system for enabling users of wireless terminals to communicate with one another using predefined messages which are related to a particular on-line service, such as, for example, an Internet web site, interactive program, streaming video and audio, etc., to which the users are or may be connected. The system includes an interactive program which supplies, upon request by a user, one or more predefined messages which are related to the content of the accessed on-line service. A user can select one or more of these predefined messages while he is simultaneously accessing the on-line service, and the selected message is then transmitted to one or more other users selected by the user.

A fourth embodiment of the invention is directed to a method of providing an online gaming system for playing games comprising connecting at least one wireless terminal adapted to run a game to be played with at least one of another wireless terminal and a game platform running the game, scanning game-related

events to identify conditions matching any of at least one predefined game-related criteria, and providing, based on any of the predefined game-related criteria, at least one game-related predefined message when at least one of the conditions matching any of the at least one predefined game-related criteria is identified. The at least one predefined message is sent to the at least one of a plurality of preselected destination addresses taking into consideration terminal capabilities of the preselected destination addresses and is subject to interaction with a user of the at least one wireless terminal.

A fifth embodiment of the invention is directed to a method of providing a system for enabling users of wireless terminals to communicate with one another using predefined messages which are related to an on-line service, such as, for example, an Internet web site, an interactive program, streaming video and audio, etc., to which the users are or may be connected. The system includes an interactive program which supplies, upon request by a user, one or more predefined messages which are related to a detected content of the accessed on-line service. A user can select one or more of these predefined messages while he is simultaneously accessing the site, and the selected message is then transmitted to one or more other users selected by the user.

A sixth embodiment of the invention is directed to a wireless terminal for playing games comprising a processor for controlling functions relating to a game, a storage device in communication with the processor, a primary input in communication with the processor for registering game-related commands input by a user of a wireless terminal, and a game program. The game program is operative on the processor of the wireless terminal for maintaining in the storage device a

database identifying at least one set of predefined messages available to send to at least one of a plurality of preselected destination addresses, for scanning game-related events to identify conditions matching any of at least one predefined game-related criteria, and for providing, based on any of the predefined game-related criteria, at least one game-related predefined message when at least one of the conditions matching any of at least one predefined game-related criteria is identified. The at least one predefined message is sent to the at least one of a plurality of preselected destination addresses taking into consideration terminal capabilities of the preselected destination addresses and is subject to interaction with a user of the at least one wireless terminal.

A seventh embodiment of the invention is directed to a wireless terminal for accessing an on-line service, such as, for example, an Internet web site, interactive program, streaming video and audio, etc., selecting a predefined message related to the content of the site, and transmitting the selected message to other users.

The game-related predefined messages in all of the game-related embodiments are generally one of the following types of messages: a game play message to be sent to the second game player during a game, a game-environment message related to playing a game to be sent to the second game player before or after the playing of a game, or an automated message to be sent to the second game player upon an occurrence of a specified event.

The predefined messages in the embodiments not specifically related to games are related to the subject matter of the accessed on-line service, may be of any content and may be transmitted while the user is accessing the on-line service or after the user has completed accessing the on-line service.

Each predefined message may be defined to comprise at least one of voice, text, sound, an image, a picture, a brief video, and a multimedia message, and may be stored at the first mobile terminal or at a network-based message database accessible to the first mobile terminal, either directly through the mobile network or indirectly from the Internet by way of the mobile network. A selection means, such as the keypad, touch screen or voice-activated message selection menu, is used to select the intended recipient of a particular predefined message.

Preferably, before the predefined message is transmitted to a mobile terminal, the capabilities of the recipient mobile terminal are assessed and the predefined message is appropriately modified, if necessary, so that the predefined message can be properly received and outputted to the user of that mobile terminal.

Other objects and features of the present invention will become apparent from the following detailed description considered in conjunction with the accompanying drawings. It is to be understood, however, that the drawings are designed solely for purposes of illustration and not as a definition of the limits of the invention, for which reference should be made to the appended claims. It should be further understood that the drawings are not necessarily drawn to scale and that, unless otherwise indicated, they are merely intended to conceptually illustrate the structures and procedures described herein.

BRIEF DESCRIPTION OF THE DRAWINGS

In the drawings wherein like reference numerals denote similar elements throughout the several views:

FIG. 1 depicts a system architecture for the playing of games available over a mobile network according to one embodiment of the present invention;

FIG. 2 depicts a block diagram of a mobile terminal showing components used in the exemplary embodiment of the invention;

FIG. 3 depicts the components of the game/messaging application at a mobile terminal in the exemplary embodiment of the invention;

FIG. 4 depicts an example of a game terminal database used in the exemplary embodiment of the invention;

FIG. 5 depicts a mobile phone displaying a sample menu of predefined messages available to be sent by a mobile phone user by entering a corresponding code from the keypad;

FIG. 6 depicts a mobile phone displaying a sample menu of predefined messages available by using a selection mechanism like up and down arrow buttons;

FIG. 7 depicts a mobile phone displaying a sample menu of predefined messages available by using an alternate selection mechanism;

FIG. 8 depicts a mobile phone on which an indicator is displayed to indicate the availability of at least one predefined message;

FIG. 9 depicts a mobile phone displaying a sample menu of groups any one of which can be selected as the default group to whom a predefined message will be sent during a game;

FIG. 10 depicts a mobile phone displaying a sample menu of groups any one of which can be selected as the default group to whom a predefined message will be sent while the player sending the predefined message is in a chat room; and

FIG. 11 depicts an alternative communication system for implementing the present invention.

DETAILED DESCRIPTION OF THE PRESENTLY PREFERRED EMBODIMENTS

In the following description of the various embodiments, reference is made to the accompanying drawings which form a part hereof, and in which is shown by way of illustration various embodiments in which the invention may be practiced. It is to be understood that other embodiments may be utilized, and structural and functional modifications may be made without departing from the scope of the present invention.

Referring to FIG. 1, a communications system 1 for implementing the present invention according to one embodiment of the invention provides one or more game players with wireless terminals 10, 20, such as a mobile phone, a personal digital assistant (PDA), or another terminal that wirelessly connect to or are under the coverage of one or more mobile or wireless communications networks that permit messages to be sent between terminals 10, 20. The mobile terminals 10, 20 are capable of presenting data information in various ways such as text, voice, audio, and multimedia. FIG. 1 illustrates an example where terminals 10 and 20 are connected to a mobile network 30. The mobile network 30 may be any type of wireless communication network or combination of networks, including, but not limited to, GSM (Global Standard for Mobile / Groupe Speciale Mobile), GPRS (General Packet Radio System), UMTS (Universal Mobile Telephone System) or 3G (Third generation of mobile communications), where 3G can be compatible with GSM, HSCSD (High Speed Circuit Switched Data), GPRS, EDGE (Enhanced Data Rates for Global / GSM Evolution) and WCDMA (Wideband Code Division Multiple Access). Various other network systems can also be supported in 3G, such as CDMA (Code Division Multiple Access), PDC (Personal Digital

Communications), or CDMA2000. The mobile terminals 10, 20 may also communicate through a WLAN (Wireless Local Area Network) or another LPRF (Low Power Radio Frequency) network such as a Bluetooth network. The transmission may also be broadcast via DAB (Digital Audio Broadcasting) or DVB (Digital Video Broadcasting). Terminals 10, 20 may be linked to the mobile network 30 by respective communication links 15, 25, such as links that permit communications substantially in real time.

A network-based game system may be implemented over communications system 1. The network-based game system includes game platform 40 that is connected to the mobile network 30 and the Internet 43 and hosts the games 45 to be played. Game platform 40 includes a game complex 47 comprising the hardware and software that enable the predefined messaging with a game/messaging application and functions like chat rooms for players.

Game complex 47 (the "game program") comprises a message database 31 for storing game-related predefined messages and to "open" and recognize codes sent by a player from one of the wireless terminals 10, 20 to game platform 40. For example, the message database must recognize that code *5 sent by terminal 10 represents a particular predefined message in message database 31 that is to be sent to a predefined destination (e.g., sent message 5 to all players). Game complex 47 further comprises a destination database 32 that stores the predefined destinations where game-related messages are to be sent (e.g., addresses of wireless terminals 10, 20 and addresses of any other game platforms). When a user enters a command to send a predefined message, the command is sent to game platform 40, which receives the command and sends the message to the destination

address(es), as previously specified to the game platform 40 in destination database 32 or as specified in the command. Predefined messages may also be stored at mobile terminal 10 in memory 56 and sent from there in which case the predefined message will be sent from mobile terminal 10 to the game platform 40 for distribution when the command is given to send a predefined message.

Game complex 47 further comprises an event database 33 for storing game-related events that trigger game-related messages (e.g., capturing, beating, killing, hitting, and seeing an opponent during a game), scanning software (or a circuit) 34 that functions as a scanning means for checking the game-related events as they occur and comparing them to contents of event database 33, and control software (or a circuit) 35 for preparing a list of event-related predefined messages to be sent to a player when scanning software 34 indicates a match between an event occurring during the game and the events listed in the event database 33.

Game complex 47 additionally includes a game terminal database 36, which includes a list of terminals connected at a particular time to a game and the specifics about these terminals such as their capabilities, and modification software (or a circuit) 37 for making any necessary adjustments to predefined messages to make them compatible for playing on all terminals connected to the game in accordance with the terminal capabilities as provided for in game terminal database 36.

The game functionality may be enhanced by utilizing a wireless application protocol (WAP) browser at mobile terminal 10 to connect to game platform 40 via a WAP gateway 50 that connects mobile network 30 and game platform 40 such that the sent predefined message is in a WAP format. Game

platform 40 and WAP gateway 50 may be platforms based on an operating system such as Microsoft Windows NT, Linux, etc. Where the WAP implementation on mobile terminal 10 does not support sound or streaming video messages, additional client software that adds these capabilities to the browser may be used. Predefined messages may also be sent as an SMS (short message service) message from game platform 40 to mobile terminals 10, 20 if an SMS center 48 is connected between game platform 40 and mobile network 30.

It should be noted that it is also possible to implement the present invention as a gaming system in which games are played between players having mobile terminals without a game platform 40 as an interface between the players. In this implementation, predefined messages will be stored only at the mobile terminals 10, 20 and sent directly between the players. This implementation is especially suitable for games implemented on short range networks in which terminals on the network communicate by short range transmissions.

FIG. 2 is a simplified illustration of mobile terminal 10 according to one exemplary embodiment of the invention showing various components used to perform the procedures of this invention. The mobile terminal 10, for example, has various components (mobile terminal 20 may generally have the same hardware and software components) comprising a central processing unit (CPU) 50 for controlling and executing all necessary procedures, and a display 52 that allows, for example, the player to read information. Display 54 may be provided with the capability of displaying multimedia information such as video. The mobile terminal 10 further comprises a network transceiver 54 to receive transmissions from and to the mobile network 30, a memory 56 and a data storage 58. Data storage 58 can also be used to

store and retrieve information about other players and predefined messages. The data storage 58 can be, for example, a hard disk magnetic or optical storage unit, as well as a CD-ROM drive or a flash memory. Mobile terminal 10 also comprises one or more input means 60 for inputting the information into the terminal, and an antenna 64. Input means 60 or means for input may be, for example, a numeric keypad, a keyboard, a software keyboard touch screen, a touch screen (in combination with the display 52), a mouse, a pointing device such as pointing pen, a voice command system, etc. In the case of DVB or DAB, the terminal must also have a DVB or DAB receiver (not shown). The mobile terminal 10 may provide voice or sound output through a speaker 53.

A messaging application 62 on mobile terminal 10 enables network access and localized support functions for a player to play a networked game, including the programming of predefined messages, including the creation or modification of the predefined messages, in accordance with the invention. Depending on how the game platform 40 is implemented, messaging application 62 may comprise customized application-specific software, which may be written in a language such as wireless markup language (WML) or Java. Alternatively, the messaging application 62 may comprise web access software, such as the above-mentioned WAP browser software, or an interface software enabled by another operating system such as Microsoft Windows CE, the Pocket PC operating system, the Palm® operating system, or the upcoming Psion EPOC operating system. Game platform 40 must support whatever method of communication messaging application 62 uses.

With reference to FIG. 3, messaging application 62 comprises a message database 64 for storing game-related predefined messages and to "open" and recognize codes sent by a player from one of the wireless terminals 10, 20 to game platform 40 or directly between terminals 10, 20. For example, the message database 64 must recognize that code *5 sent by terminal 10 represents a particular predefined message in message database 31 that is to be sent to a predefined destination (e.g., sent message 5 to all players). Messaging application 62 further comprises a destination database 65 that stores the predefined destinations where game-related messages are to sent (e.g., addresses of wireless terminals 10, 20 and addresses of any other game platforms). When a user enters a command to send a predefined message, the command is sent to game platform 40, which receives the command and sends the message to the destination address(es), as previously specified to the game platform 40, as specified in the command, or as specified in message database 64.

Messaging application 62 further comprises an event database 66 for storing game-related events that trigger game-related messages, scanning software (or a circuit) 67 that functions as a scanning means for checking the game-related events and comparing them to contents of event database 66, and control software (or a circuit) 68 for preparing a list of event-related predefined messages to be sent to a player when scanning software 67 indicates a match between an event occurring during the game and the events listed in the event database 66.

The communications system 1 permits a player in a WAP or other wireless game system to play and interact with others in the game system using input means 60. For example, by pressing buttons on a keypad or using other simple

selection means, such as a touch screen or voice-activated message selection menu, a player to whom a particular predefined message should be sent can be selected or predefined messages can be sent to other players on the game system who are opponents or potential opponents.

Messages may be predefined (and possibly stored) at mobile terminal 10 by the player inputting the content of the messages there or may be predefined at game platform 40, or at some other network element to which a game player has access. Predefined messages may also be entered by the player at a fixed terminal 49 that can communicate with game platform 40 such as over the Internet 43. Alternatively, some predefined messages may be defined at the system level by game administrators or others, such as a group of players, where they are available in message database 31 for access by one or more players. A player may be allowed to modify a system level predefined message and save it as his own predefined message. Some of the predefined messages may be standard types of messages (e.g., "Do you want to play a game?") and others may be customized to a particular player, game, situation, etc. In defining the messages, the game player must also define a key combination or other type of command for sending a particular predefined message. The message database 31 can be accessed by both players and administrators with different modification rights. A player is usually only given permission to modify those messages he has defined himself. Messages may be modified periodically to keep them interesting. Where at least some of the messages are player-defined, it is preferable to define the messages at a time other than during the playing of a game so that it is not necessary to disrupt the game to create a message and to customize the messages that are sent. The player can be said to be

"interacting" with the predefined message when selecting and/or defining the messages, or when selecting to whom the predefined messages are to be sent.

A game-related predefined message can be sent at any point after a game player logs onto the game system and may comprise one of different message types. Such predefined messages can be, for example:

A) Game-play Related

This message type is generally used during the playing of games. For example, a message may be defined such that by pressing "#1" during the game, a game player may cause the opponent game player's terminal to say "check mate, buddy" during a chess game and at the same time cause a text message with the same three words to scroll across the opponent's screen.

B) Game-environment Related

This message type includes messages that are sent in an environment related to the game but that are not actually sent during the playing of the game. (In other words, these messages are "outside the game.") This includes game environments, such as game rooms in which games can be started or chat rooms where players can communicate with each other or any other place within the game system before the start of or after finishing a game. (A game room may in fact be a chat room as well.) For example, a player can invite another player who is logged in to join him in playing a game by pressing "*1". This sends a predefined message to the potential opponent's terminal, such as an audible message, that says "Player X wants to play a game of chess with you. Press '*' to accept."

C) Automated

Messages of this type are automatically sent upon the occurrence of a specific event defined by the system or the player. For example, the player can choose to automatically send a selected message to specified other system players that he has preselected every time he logs-in to the game system. This type of message could be "Yo! I am ready to play". A player might also choose to be alerted every time there is a player online who is more highly ranked than he in a particular game. This type of automated message might say: "There is a worthy opponent online." Similarly, a player might select to be notified when someone has passed him on a ranking list of players.

A player who is sent game-related predefined messages can arrange to have some or all of the predefined messages he receives while offline from the gaming system or while at a terminal that is not WAP-enabled (where the WAP is necessary for using the gaming system) to be forwarded to him at another terminal from which he can retrieve the messages, such as forwarding the messages to his email address, to an alphanumeric pager, or to a short message system of the terminal that is not WAP-enabled. This enables a player to react, such as by returning to a WAP-enabled terminal and logging into the gaming system, if something happens in a game in which he is engaged while he is offline.

A predefined multimedia message may comprise a picture in a particular format. In multimedia messaging, such as in the multimedia messaging service (MMS) available on mobile terminals (like Nokia mobile phones model numbers 3210, 3310, and 6210), the picture portion of the multimedia message can be sent by using, for example, the short message service (SMS) as the bearer.

Sounds included in a predefined message may be any type of sound, such as a human voice, possibly of the game player, a synthesized voice, a sound of an explosion in a war-related game, or a part of a song, such as "We are the Champions!", as appropriate.

The terminals receiving the predefined messages must of course have the capability of playing the received messages, including display and sound capabilities. For example, the picture (or video) in a multimedia message can be shown on a mobile terminal only if the terminal has the capability of showing the picture in the particular format it is in. On those terminals that do not have that capability, the pictures may be displayed in an unclear manner or not displayed at all. A record of terminal capabilities, including information about whether or not a particular phone is able to display a picture in a particular message format, may be registered in a server at game platform 40, such as in destination database 32, at some other part of the network element accessible to game platform 40, and/or at destination database 65 at wireless terminal 10. Where the picture messages are not displayable at a particular terminal, the picture portion of the message sent to those terminals may be converted at the server, if possible, to alphanumeric characters and/or voice so that users of these terminals can also utilize the predefined message schema. Using the record of terminal capabilities, where a predefined message having a picture is to be sent to multiple terminals, at least one of which does not support the display of the picture, game platform 40 will send the complete message with picture to those terminals that can display the picture and will modify the message and send text in place of the picture (the text being a brief description of the contents of the picture) to the player(s) whose terminals cannot display the picture.

FIG. 4 shows an example of destination database 32 which stores the record of terminal capabilities along with the predefined destinations where game-related messages are to be sent. For example, in FIG. 4, player 1 has a wireless terminal whose destination address is Address1 and is a Nokia terminal model 3210 which is capable of displaying picture messages. Player 2 has a wireless terminal whose destination address is Address2 and is a Nokia terminal model 6210 which similarly is capable of displaying picture messages. Player 22 has a wireless terminal whose destination address is Address22 that is a Nokia terminal model 2110 which is only capable of displaying text messages but not picture messages so game platform will send a text message to player 22 in lieu of a picture message that is sent to player 22. Player 23's Nokia multimedia terminal, having a destination address Address23, can display video messages.

A player may be able to memorize the messages and their methods of selection and can, in that case, send one of the predefined messages by pressing the appropriate keys. Alternatively, the player can select a Help feature to display a menu of messages such as the sample Help menu screen 74 that is displayed in FIG. 5 on a mobile terminal 10, which in this example is a mobile phone. The displayed screen 74 contains five predefined messages, each of which can be activated by entering a code on the keypad. For example, pressing the "Star" (*) key 72 followed by the indicated number activates the desired predefined message to be sent to one or more preselected destination addresses. The destination addresses are generally addresses of mobile or fixed terminals of potential players, e.g., potential players in the chat room, game room, etc. In this example, pressing "*1" at screen 74 sends the message "Wanna Play?" to selected potential players. Message 4 is reserved in this

example for a user-defined message. The players to whom a predefined message are to be sent may be selected from a similar menu that may be displayed. Generally, the players to whom the message is sent may be designated with a default setting so that the number of clicks required by the user interface is kept to a minimum. The menu of messages and the menu of players to whom the messages may be sent may be scrolled through with button 76 that allows the player to scroll up and down through the menu.

Game-related predefined messages can also be activated and sent by some other easy activation means such as buttons 77a, 77b on terminal 20 that can be dedicated to this functionality. The choice of predefined messages offered on screen at a particular time may be filtered so that only a menu of message choices that are appropriate to the state at which the player is in the game system is offered or displayed. Messages that are unnecessary or otherwise inappropriate at that state are not offered or are at least not displayed.

FIG. 6 shows another sample screen 78 illustrating a game room for checkers players from which predefined messages may be sent. In the illustrated checkers game as many as four players may play a single checkers game online. In the illustrated dialog, Zimbo says "What's up guys?" to which Jarbo responds "Dunno" (i.e., I do not know). The game player at mobile phone 10 has two possible messages represented by respective icons 80, 81 to send to the other members of the chat room: "Invite" and "I rule!". Instead of selecting to send either of these messages with a combination of two numerical keys on keypad 70 as in FIG. 5, one may select either of these messages by tabbing to the appropriate icon of icons 80, 81 or if display 52 is a touch screen by touching on the respective icon.

FIG. 7 illustrates another sample screen 82 that is a close variation of screen 78 but displays the icons 80, 81 as part of a menu of icons. The other icons are not displayed on screen 82 at the same time as icons 80, 81 but are selectable by clicking on left-pointing or right-pointing arrows 84, 86 which causes other available icons to be displayed. Any of the predefined messages, such as those shown in FIGS. 5 to 7, may also be selected by a voice command from a voice-activated message selection menu, if available on communication system 1.

Rather than invoking the Help command to display a menu of functions available at a particular point in the game, the messaging application 62 can also scan for game-related events to identify conditions that match predefined game-related criteria. One such condition may be an action of a player that occurs during a game or outside the game, using predefined game-related criteria (e.g., a player loses or is killed). When such a condition occurs, the messaging application 62 offers to the player a selection of messages suitable to that condition to be sent to a selectable player and/or player group. For example, when a player kills an opponent in a game, the player might have a small pop up-screen on the display of a mobile terminal 20 indicating a list of available commands and any predefined destinations associated therewith. The exemplary list shown on the display could be the following:

TABLE I

Msg. No.	Message Contents And Destinations	
1	Gotcha	(to killed player)
2	You're wasted	(to killed player)
3	One more killed	(to all players)
4	I'm the master!	(to all players)
5	Foe killed	(to team members)
6	One more down!	(to team members)
7	---optional---	(to killed player)
8	---optional---	(to all players)
9	---optional---	(to team members)

The predefined criteria for which the messaging application 62 scans could be an event occurring during the game (e.g., hit, kill, seeing opponent, entering place, etc.), or outside the game (e.g., entering chat room, starting game, looking for opponents, etc.). When an event triggers the predefined messages, the messages that are available are limited to the messages that relate to the event currently happening. A message that is entered at least partly by user can also be made available at this point even where this message does not match the predefined criteria (e.g., optional messages number 7 and number 9 in Table I.) A player can select a suitable predefined message to be sent to a selected address by, for example, using one or more browser buttons. Using the example in Table I, by pressing button #1 a player sends a "Gotcha" message to a killed player and by pressing #5 a player sends a "Foe killed" message to other members of his team. In a further automated scenario, there may be a message prompt to the player offering a particular predefined message, and a user has the option of responding with a "yes" (send the predefined message) or "no" (do not send the predefined message).

The availability of predefined messages to be sent can also be indicated by an indicator like a shortcut or by a blinking asterisk somewhere on the display screen which opens a look-up table such as Table I upon user activation to display a menu of available options. FIG. 8 illustrates an example of such a blinking asterisk 102 appearing on the display screen during a game. When a user is interested in sending a predefined message, he activates the asterisk and the pop up screen with a menu of choices in the look-up table appears. The size of the pop up screen could be from ¼ size or even smaller screen to a whole screen covering over the look-up table). The user can then select the destination address(es) to whom the predefined message should be sent using the screen prompts.

As illustrated in the example of Table I, the game platform 40 that handles the messages can have several "layers". For example, sometimes a player might want to send a message to his team, but not his opponents, to advise his team that he has "killed" an opposing player. He can send message number 5 for this purpose. To notify his opponents of the same thing, he could send message number 3.

Instead of sending messages with different numbers, the same message can be sent in one of various "modes" made available for sending predefined messages. For example, in one mode, by pressing "*1", "*2", or "*7" the player sends a message #1, #2, or #7, respectively, to all participants of the game. In a second mode, the player sends a message #1, #2, or #7, respectively, to all players on his team by pressing "01", "02", or "07".

As another alternative, a predefined message for which no destination is explicitly specified by the message can be sent to a default player or group of

players. The default setting for players to whom the predefined message is sent may differ depending on where the player sending the message is in the game system. To change the defaults, the player can press "*5" at screen 74 to enter the "change defaults" command. If the player was playing a game when entering the "change defaults" command, a screen such as screen 90 shown in FIG. 9 may be displayed and offer a menu of groups 1-4 comprising one or more persons to whom messages could be sent as a default. The player can choose any of the available groups, which may include for example the following illustrated groups: Group 1 - all players of a particular game receive the messages; Group 2 - only players on the sender's own team receive the messages; Group 3 - only enemies receive the messages; and Group 4 - a user-defined group receives the message. Pressing "5" at screen 90 returns the player to the previously defined default setting. If the player was in a chat room when entering the "change defaults" command, a screen such as screen 100 shown in FIG. 10 may be displayed and offer another menu of groups 1-4 comprising one or more persons to whom messages could be sent as a default. The player can choose any of the available groups at screen 100, which may include for example the following illustrated groups: Group 1 - everyone in the chat room receive the messages; Group 2 - all players starting a game receive the messages; Group 3 - the same default group as for the previously sent message; and Group 4 - a user-defined group receives the message. Pressing "5" at screen 100 returns the player to the previously defined default setting.

In trivia-type games, a user could send a predefined message to obtain hints (or actual answers) for answering the questions by sending the message comprising a copy of the question to game platform 40 or some other source of help

to receive either an automated response or personal assistance. In non-trivia-type games, a predefined message can be sent to obtain help and may contain contents specifically relevant to the particular game being played as well as the current situation that has been encountered during the game (e.g., a particular move, question, or other situation). In either type of game, the message will include a phone number or numbers, internet address either automatically or inputted manually by the user, or other contact information to which the help source can send a reply containing the requested information. The message may also contain information for charging the user for assistance, whether by using a credit card, using credit received by playing the game, or by some other means. The predefined messages could also contain information related to the user location, utilizing information received from a global positioning satellite system (GPS), mobile network or by some other corresponding means. In certain situations, such as where a game player waits too long to perform an action, respond to a trivia question, etc., the game may prompt the player to send a predefined message requesting help or the game may cause a predefined message requesting help to be sent.

When a terminal receives a multimedia predefined game-related message, an indication that a message has been received may be displayed on the receiving terminal. The received indication may be a picture that reflects the contents of the message. For example, when a player wins a game, the picture can represent the winning of a prize with a picture of a trophy, gold bullion, money purse, etc. that indicates the value of the prize. The picture may be, for example, an electronic coupon which could be utilized later when buying an item, where the item may be, for example, additional playtime i.e. connection time to the game system.

In another embodiment of the invention, users of wireless terminals can communicate with one another using predefined messages which are related to a particular on-line service, such as, for example, an Internet web site, interactive program, streaming video and audio, etc., to which the users are or may be connected. For example, Gary is connected to a radio station with his mobile terminal, and the radio station is playing the latest released song of singer, Britney Spears. The radio station is accessible to Gary's mobile terminal either directly through the mobile network or indirectly, for example, from the internet through the mobile network. Gary likes Britney Spears and her music, so he wants to inform his friends Suzie and Peter that the singer's latest song is currently on the air. While the song is playing on his mobile terminal, Gary has an option to send to his friends a predefined message which is contextually related to the output of the mobile terminal, i.e., the radio station broadcast. Gary selects the predefined message "Hey, check what's on radio station Energy", and, after pressing an appropriate button or buttons on his mobile terminal, the selected predefined message is sent to Suzie's and Peter's mobile terminals. Other predefined messages could be "Check radio station Energy in 5 minutes", "Energy plays the best tunes", "Energy NOW", etc. Additionally, the available predefined messages could be linked to the immediate broadcast of the on-line service. In this example, possible predefined messages might include: "Don't you love this Britney Spears song?", "Check out the new Britney Spears song now playing on Energy", etc. The actual transmission of the message can be done either by the mobile phone itself or by a remote service platform which transmits the selected message in response to the transmit instruction entered by Gary on his mobile phone. The transmission of the message can be immediate or at a later time,

such as upon the user's termination of his connection to the on-line service. Upon receipt by Peter and Suzie of the message, they can also tune into the radio station using their mobile terminals and respond to Gary's message by selecting one of the offered predefined messages, which are also contextually related to the output of their mobile terminals, i.e., to the radio station signal. For example, if Peter does not like the song being played, he could select and transmit to Gary and/or Suzie the predefined message "I think it stinks". Other possible messages might be, for example, "Cool tune!", "Energy rules", "Love it!", "Next tune, please", "Britney Spears is awesome!", etc. By having available a selection of predefined messages related to the content to which the mobile terminal is connected, communication to other users is faster and easier.

In another example, Gary is surfing the Internet using his mobile phone. He enters a web page of the Acme Travel Agency. While Gary checks available travel offerings, he discovers that there are predefined messages available, including, for example, "Send me info Re: one-week Caribbean vacations", "Send me info Re: weekend travel deals", "Send me info Re: latest travel packages -- Helsinki to US", "Send me info Re: displayed itinerary". These messages may be displayed on and available for all of the Internet pages of the Acme Travel Agency. While Gary checks various offerings on various web pages of Acme's web site, he presses an appropriate button or buttons on his mobile terminal indicating "Send me info Re: displayed itinerary ". Gary's terminal sends an appropriate indication of his selection to a service platform, which records Gary's phone number and sends the request to the Acme Travel Agency. Although the service platform may be a unit servicing many subscribers, one of which being the Acme Travel Agency, alternatively, the

service platform may be directly connected to the Acme Travel Agency. In response to the receipt of Gary's message, the Acme Travel Agency can send one or more SMS messages to Gary including the information requested by Gary.

Preferably, before the predefined message is transmitted to a recipient terminal (either the original user's terminal or the terminal of an intended recipient), the capabilities of the recipient terminal are assessed, and the predefined message is appropriately modified, if necessary, so that the predefined message can be properly received and outputted to the user of that terminal. Such an assessment prevents a message from being transmitted to a terminal as a type or in a form which the recipient terminal cannot properly handle. In addition, the message can be simplified, and therefore shortened, depending upon the recipient terminal's capabilities, thereby decreasing message transport time and reducing bandwidth usage. For example, if the recipient terminal is a mobile phone with a relatively small monitor, and if the message is an image, there is no need to send the image message with a very high resolution since the user will not be able to see any difference. Similarly, if the recipient terminal is a mobile phone with its limited frequency response speaker, and if the message includes sound, there is no need to send the sound message with a large frequency spectrum. In both of these examples, the message can be modified accordingly. In addition, if the recipient terminal cannot appropriately output messages of a certain type or format, it is a waste of resources and time to transmit the message of this type or format. Instead, the message is converted before transmission to a more appropriate type or format which can be properly outputted by the receiver terminal. In this embodiment, the receiver terminal is queried before transmission of the message to ascertain its capabilities. Alternatively or additionally, if the capabilities of the

terminal are stored in a database of a server, that server is queried. The query may simply be determining the make and model of the terminal and then checking a database to determine whether the message to be sent can be properly received by the recipient terminal. If not, the message is modified to meet the recipient terminal's known capabilities.

FIG. 11 is an alternative communication system for implementing the present invention. As in FIG. 1, a plurality of mobile terminals 10, 20 are wirelessly connected to one or more mobile networks 30. The mobile network 30 is connected to one or more fixed networks 110, such as the Internet, by a gateway 50, which may be a WAP gateway. The mobile network 30 is also connected to one or more service platforms 41. The fixed network 110 is connected to one or more fixed terminals 49, one or more service providers 112, and one or more content providers 114. The service platform 41 may be a game platform 40, as discussed with respect to FIG. 1, or may be another type of platform that provides other on-line services, such as the above described radio station, an interactive program, a provider of sports scores, or television listings, etc. Service platform 41 stores a plurality of predefined messages that are custom tailored to the use of that particular platform. When a user connects to service platform 41 through the mobile network 30, the on-line service requested by the user is made available to the user's mobile terminal 10 along with a plurality of predefined messages, as and when appropriate. As discussed above, when a user selects one of the predefined messages for transmittal to the mobile terminal 20 of one or more other users, the service platform 41 is informed of the address of the mobile terminal of the recipient(s) and transmits the selected message to that address(es). The recipient(s) may be another mobile terminal 20 or a fixed terminal 49 addressable through the

Internet 110. In this case, the fixed terminal 49 is accessed by the mobile network 30 through gateway 50. The user's mobile terminal may also access a service platform 112 through an Internet connection, as described above with reference to the Acme Travel Agency web site example. Service platform 112 is similar to service platform 41 except that it is accessed indirectly through the Internet 110 (or other fixed network) rather than directly through the mobile network 30. Content provider 114 may act as an additional source of on-line services. Similarly, the predefined, subject matter associated, messages are preferably stored at the content provider 114 as the ultimate source of the content being transmitted to the users. Alternatively, the predefined messages may be stored elsewhere, such as in the mobile terminal after an appropriate download.

Thus, while there have shown and described and pointed out fundamental novel features of the invention as applied to a preferred embodiment thereof, it will be understood that various omissions and substitutions and changes in the form and details of the devices illustrated, and in their operation, may be made by those skilled in the art without departing from the spirit of the invention. For example, it is expressly intended that all combinations of those elements and/or method steps which perform substantially the same function in substantially the same way to achieve the same results are within the scope of the invention. Moreover, it should be recognized that structures and/or elements and/or method steps shown and/or described in connection with any disclosed form or embodiment of the invention may be incorporated in any other disclosed, described or suggested form or embodiment as a general matter of design choice.

CLAIMS

What is claimed is:

1. An online gaming system for playing games, the system comprising:

at least one wireless terminal adapted to run a game to be played with at least one of another terminal and a game platform running the game; and

a game program for providing at least one game-related predefined message based on a predefined game-related criteria, the predefined message being sent to at least one of a plurality of preselected destination addresses taking into consideration terminal capabilities of the preselected destination addresses and being subject to interaction with a user of the at least one wireless terminal.

2. The online gaming system of claim 1, wherein the predefined game-related criteria comprises an event that is related to the game and is predefined.

3. The online gaming system of claim 2, wherein the game program comprises means for scanning for game-related events.

4. The online gaming system of claim 3, wherein the predefined game-related criteria are met where at least one of the game-related events match at least one of a plurality of predefined game-related events.

5. The online gaming system of claim 4, wherein the at least one game-related predefined message comprises content related to the at least one game-related event if the predefined game-related criteria are met.

6. The online gaming system of claim 1, wherein the at least one wireless terminal comprises a dedicated button to be activated by the user to send the at least one game-related predefined message to the at least one destination address.

7. A method of providing an online gaming system for playing games, the method comprising:

connecting at least one wireless terminal adapted to run a game to be played with at least one of another wireless terminal and a game platform running the game;

scanning game-related events to identify conditions matching any of at least one predefined game-related criteria; and

providing, based on any of the predefined game-related criteria, at least one game-related predefined message when at least one of the conditions matching any of the at least one predefined game-related criteria is identified, wherein the at least one game-related predefined message is subject to interaction with a user of the wireless terminal and is sent to at least one of a plurality of preselected destination addresses taking into consideration terminal capabilities of the preselected destination addresses.

8. The method of claim 7, wherein the predefined game-related criteria comprises an event that is related to the game and is predefined.

9. A wireless terminal for playing games, the terminal comprising:

a. a processor for controlling functions relating to a game;

b. a storage device in communication with the processor;

c. a primary input in communication with the processor for registering game-related commands input by a user of a wireless terminal; and

d. a game program operative on the processor of the wireless terminal for:

i. maintaining in the storage device a database identifying at least one set of predefined messages available to send to at least one of a plurality of preselected destination addresses;

ii. scanning game-related events to identify conditions matching any of at least one predefined game-related criteria; and

iii. providing, based on any of the predefined game-related criteria, at least one game-related predefined message when at least one of the conditions matching any of at least one predefined game-related criteria is identified, wherein the at least one predefined message is sent to at least one of a plurality of preselected destination addresses taking into consideration terminal capabilities of the preselected destination addresses and is subject to interaction with a user of the at least one wireless terminal.

10. The wireless terminal of claim 9, wherein the predefined game-related criteria comprises an event that is related to the game and is predefined.

11. A system for enhancing communication on a wireless network using predefined messages, comprising:

a service platform running an on-line service, the on-line service pertaining to a certain content;

at least one wireless terminal for communicating with at least the on-line service of said service platform through the wireless network;

an interactive program providing a predefined message related to the certain content based upon predefined criteria; and

transmitting means for transmitting the predefined message to at least one address selectable by a user of the at least one wireless terminal.

12. The system of claim 11, wherein the at least one address selectable by the user of the wireless terminal comprises a predetermined address.

13. The system of claim 11, further comprising at least one other terminal communicating with the at least one wireless terminal and wherein the at least one address selectable by the user of the at least one wireless terminal comprises an address of the at least one other terminal.

14. The system of claim 13, further comprising:

means for assessing an output capability of said at least one other terminal to receive the predefined message; and

means for configuring the predefined message, prior to transmitting the predefined message to the address of the at least one other terminal, so that the output capability of the at least one other terminal to receive the predefined message is taken into consideration.

15. The system of claim 11, wherein said interactive program comprises a content determining means for determining the content of the on-line service, wherein the predefined criteria comprises a component of the content of the on-line service.

16. The system of claim 16, wherein said interactive program further comprises a message presentation means for receiving the predefined criteria and for generating or selecting the predetermined message based upon the predefined criteria.

17. The system of claim 11, wherein the predefined message is stored in and retrieved by the interactive program from a storage device in the wireless terminal.

18. The system of claim 11, wherein the predefined message is stored in and retrieved by the interactive program from a storage device in the service platform.

19. A method for enhancing communication on a wireless network using predefined messages, the method comprising the steps of:

connecting at least one wireless terminal to a service platform running an on-line service, the on-line service pertaining to a certain content;

providing a predefined message related to the certain content based upon predefined criteria; and

transmitting the predefined message to an address selectable by a user of the at least one wireless terminal.

20. The method of claim 19, wherein the at least one address selectable by the user of the wireless terminal comprises a predetermined address.

21. The method of claim 16, further comprising the step of connecting at least one other terminal to at least one of the at least one wireless terminal and the service platform.

22. The method of claim 19, further comprising the steps of:

assessing an output capability of the at least one other terminal to receive the predefined message; and

configuring the predefined message, prior to transmitting the predefined message to the address of the at least one other terminal, so that the output capability of the at least one other terminal to receive the predefined message is taken into consideration.

23. The method of claim 19, wherein the step of providing a predefined message related to the certain content based upon predefined criteria further comprises determining the content of the on-line service, wherein the predefined criteria comprises a component of the content of the on-line service.

24. The method of claim 23, further comprising the step of receiving the predefined criteria, and generating or selecting the predetermined message based upon the predefined criteria.

25. The method of claim 19, further comprising the step of indicating to a user of the at least one wireless the availability of the predefined message related to the certain content.

26. The method of claim 19, wherein the predefined message is stored in and retrieved from a storage device in the wireless terminal.

27. The method of claim 19, wherein the predefined message is stored in and retrieved from a storage device in the service platform.

28. A wireless terminal comprising:

a. a processor in communication with a data storage device;

b. a primary input in communication with the processor registering content-related commands input by a user of the wireless terminal;

c. an interactive program operative on the processor for:

i. maintaining in the storage device a database identifying at least one set of predefined messages available to send to at least one of a plurality of preselected destination addresses;

ii. scanning content-related events to identify conditions matching any of at least one predefined criteria;

iii. providing, based on any of the predefined criteria, at least one content-related predefined message when at least one of the conditions matching any of the at least one predefined content-related criteria is identified, wherein the at least one

content-related predefined message is subject to interaction with a user of the wireless terminal; and

iv. sending the at least one content-related predefined message to at least one of a plurality of preselected destination addresses.

29. The wireless terminal of claim 28, further comprising:

d. means for assessing an output capability of a terminal to receive the predefined message at the destination address; and

e. means for configuring the predefined message, prior to transmitting the predefined message to the at least one of a plurality of preselected destination addresses, so that the predefined message is within the output capability of a terminal to receive the predefined message at the respective destination address.

30. The wireless terminal of claim 28, wherein the interactive program is further operative for determining the content of an on-line service connected to the wireless terminal, wherein the at least one predefined criteria comprises a component of the content of the on-line service.

31. The wireless terminal of claim 28, further comprising:

a dedicated button to be activated by a user to cause the predefined message to be transmitted to the at least one of a plurality of preselected destination addresses.

32. The wireless terminal of claim 28, wherein the storage device is located in the wireless terminal.

33. The wireless terminal of claim 28, wherein the storage device is located in a service platform.

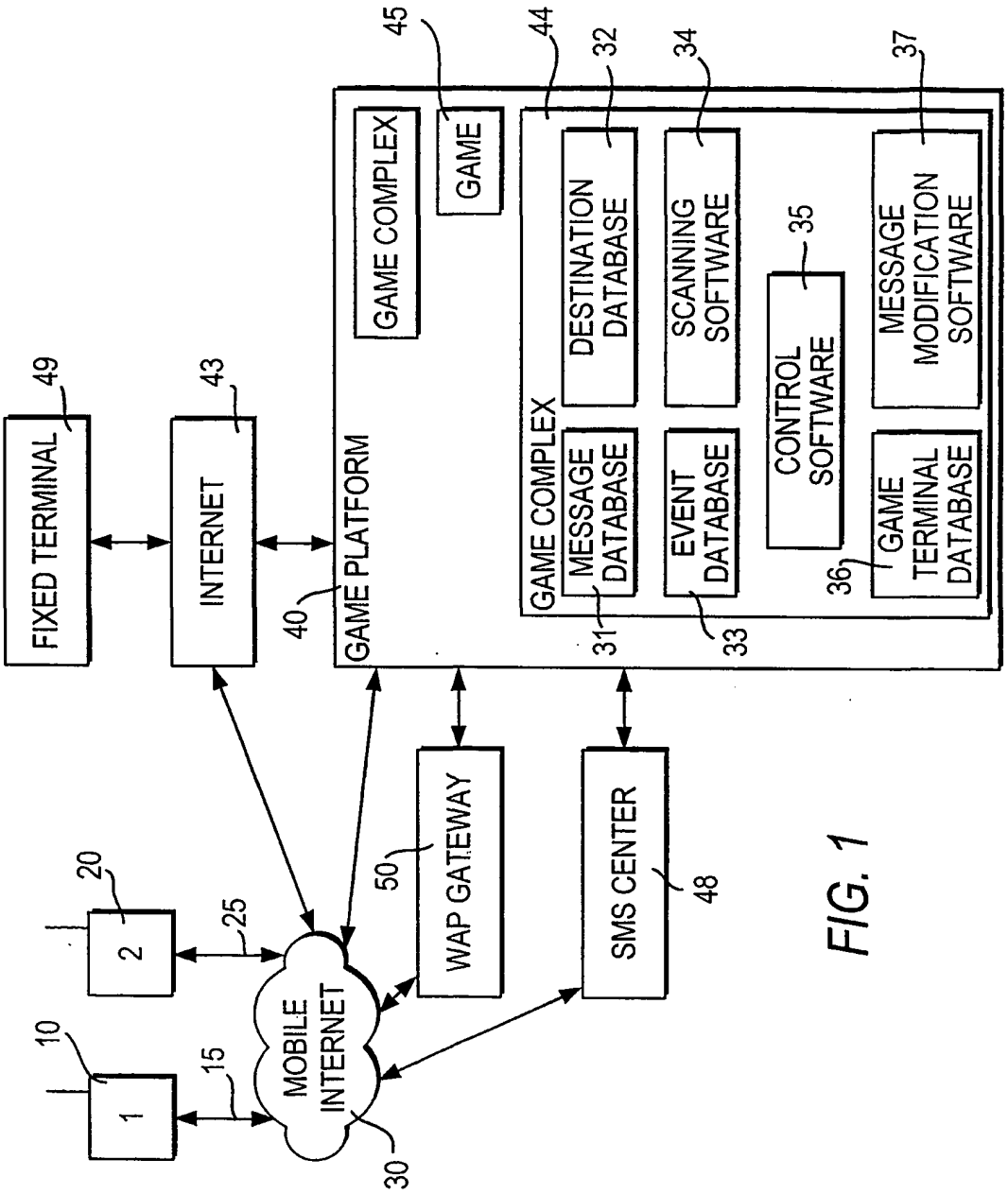
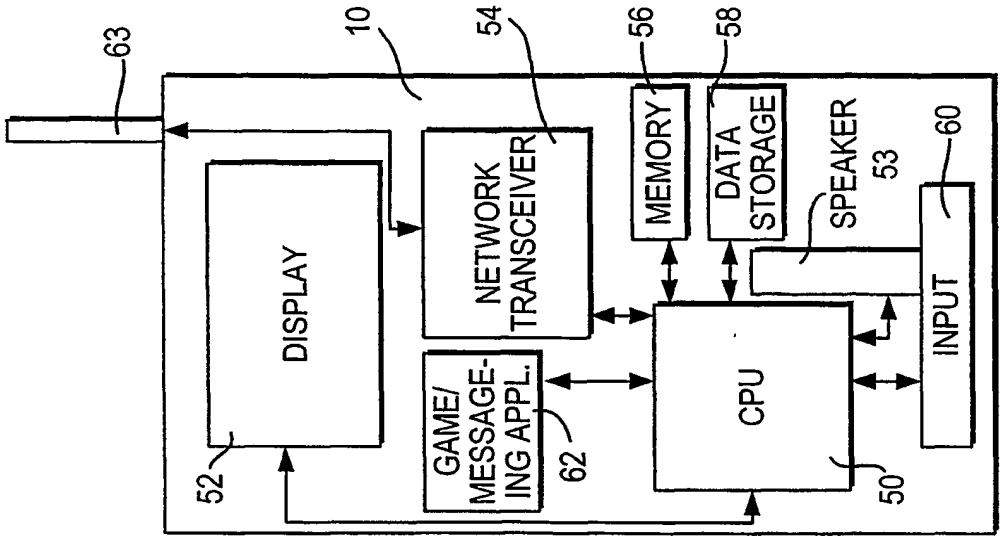

FIXED TERMINAL
49
INTERNET
43
GAME PLATFORM
40
GAME COMPLEX
45
GAME
44
GAME COMPLEX
DESTINATION DATABASE
32
SCANNING SOFTWARE
34
MESSAGE MODIFICATION SOFTWARE
37
CONTROL SOFTWARE
35
MESSAGE DATABASE
31
EVENT DATABASE
33
GAME TERMINAL DATABASE
36
WAP GATEWAY
50
SMS CENTER
48
MOBILE INTERNET
30
1
10
15
2
20
25

FIG. 1

FIG. 2


63
10
54
56
58
60
DISPLAY
NETWORK TRANSCEIVER
MEMORY
DATA STORAGE
SPEAKER 53
INPUT
GAME/ MESSAGE-ING APPL.
62
CPU
52
50

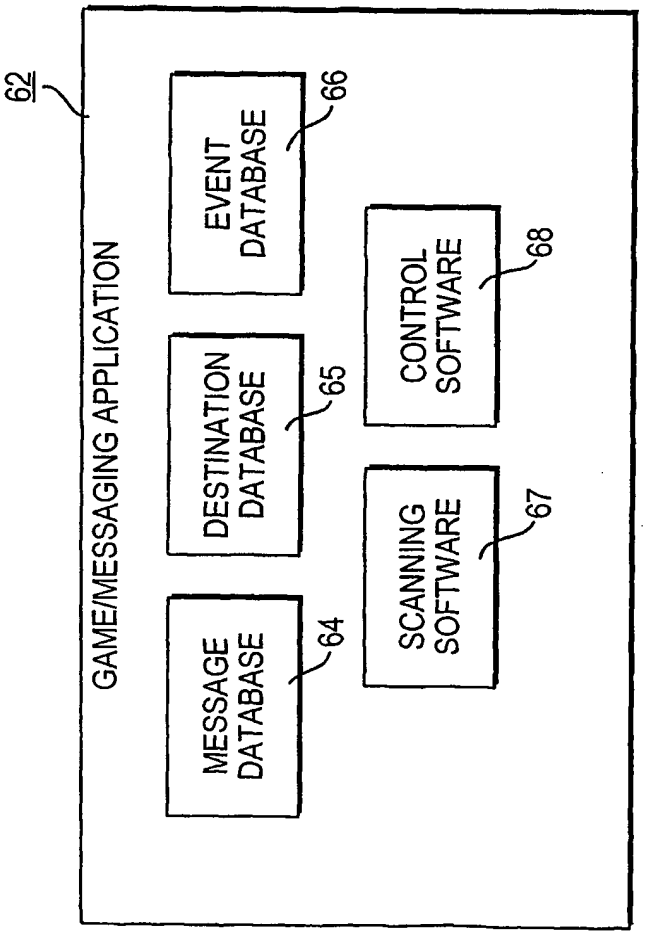

62
GAME/MESSAGING APPLICATION
MESSAGE DATABASE
64
DESTINATION DATABASE
65
EVENT DATABASE
66
SCANNING SOFTWARE
67
CONTROL SOFTWARE
68

FIG. 3

GAME TERMINAL DATABASE 32

PLAYER #	TERMINAL TYPE	TERMINAL CAPABILITY/MESSAGE TYPE	DESTINATION ADDRESS
PLAYER 1	NOKIA 3210	PICTURE MESSAGE	ADDRESS 1
PLAYER 2	NOKIA 6210	PICTURE MESSAGE	ADDRESS 2
.....	.....	.....	.....
.....	.....	.....	.....
.....	.....	.....	.....
.....	.....	.....	.....
PLAYER 22	NOKIA 2110	TEXT MESSAGE	ADDRESS 22
PLAYER 23	NOKIA MULTIMEDIA	VIDEO MESSAGE	ADDRESS 23
.....	.....	.....	.....
.....	.....	.....	.....
.....	.....	.....	.....
.....	.....	.....	.....
PLAYER XXXX	TERMINAL YYYY	MASSAGE ZZZZZ	ADDRESS XXXX

FIG. 4

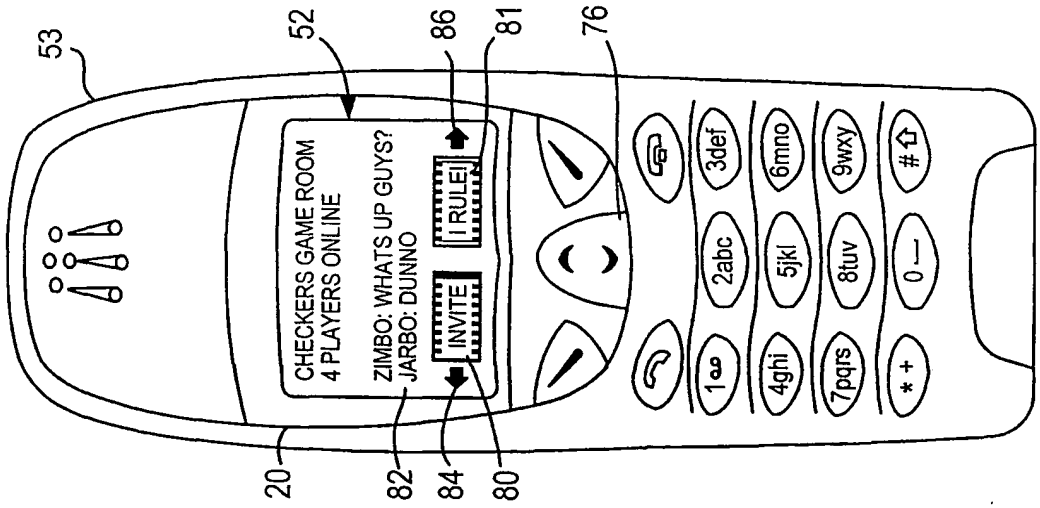


FIG. 7

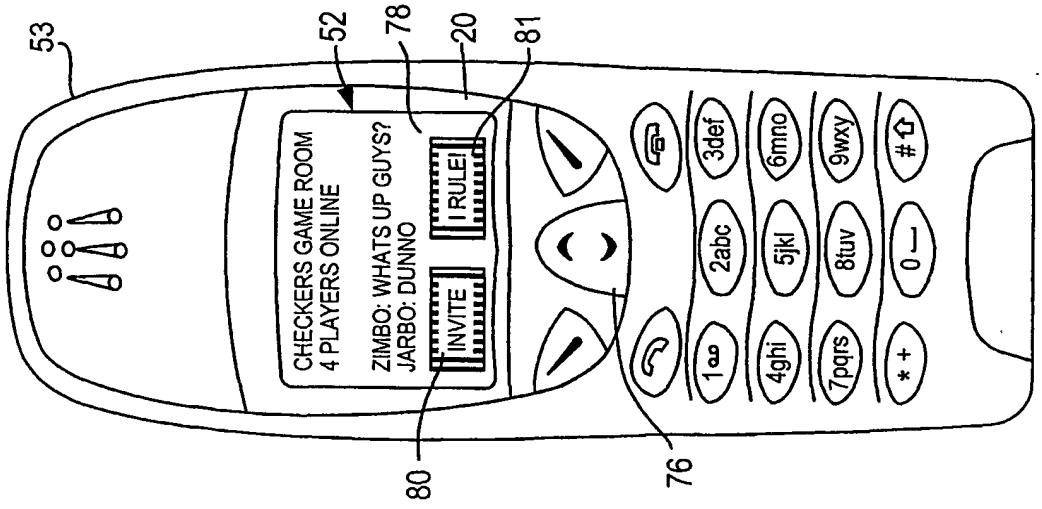


FIG. 6

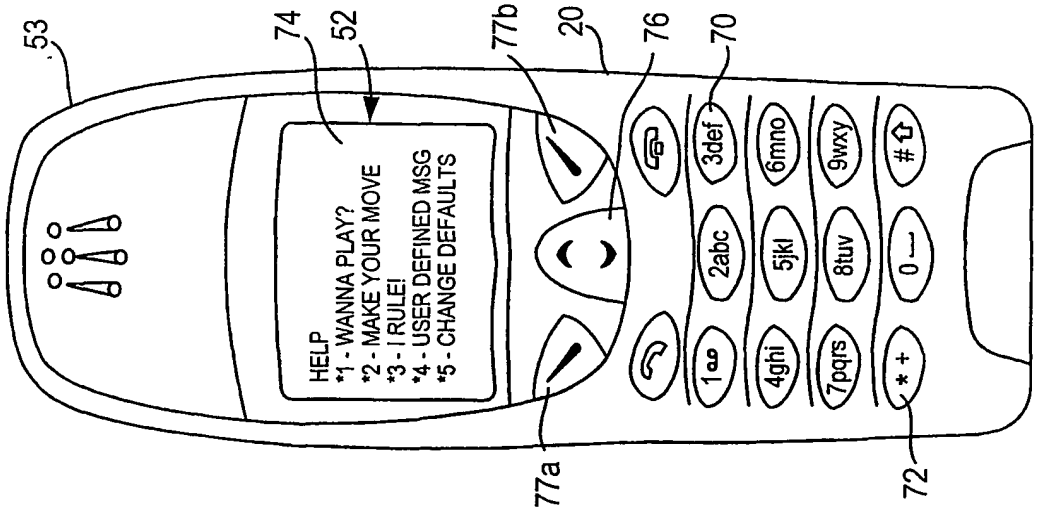


FIG. 5

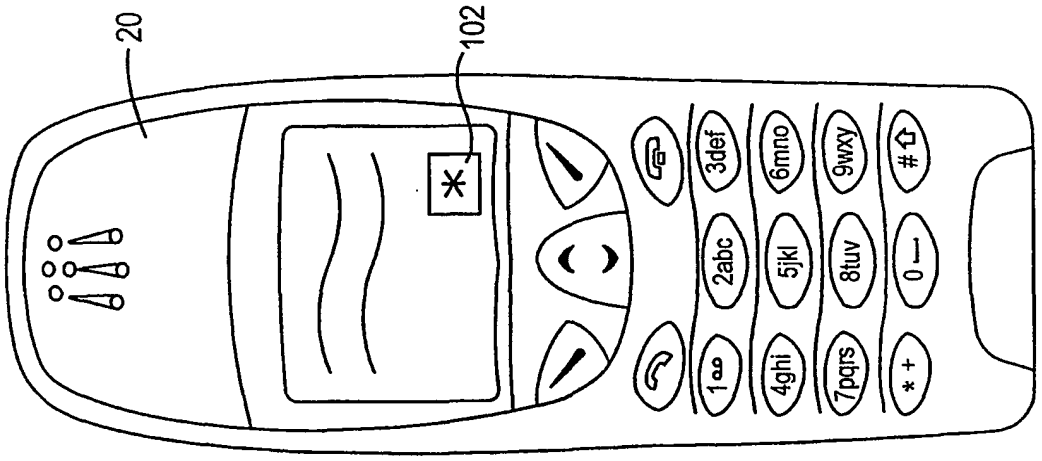


FIG. 8

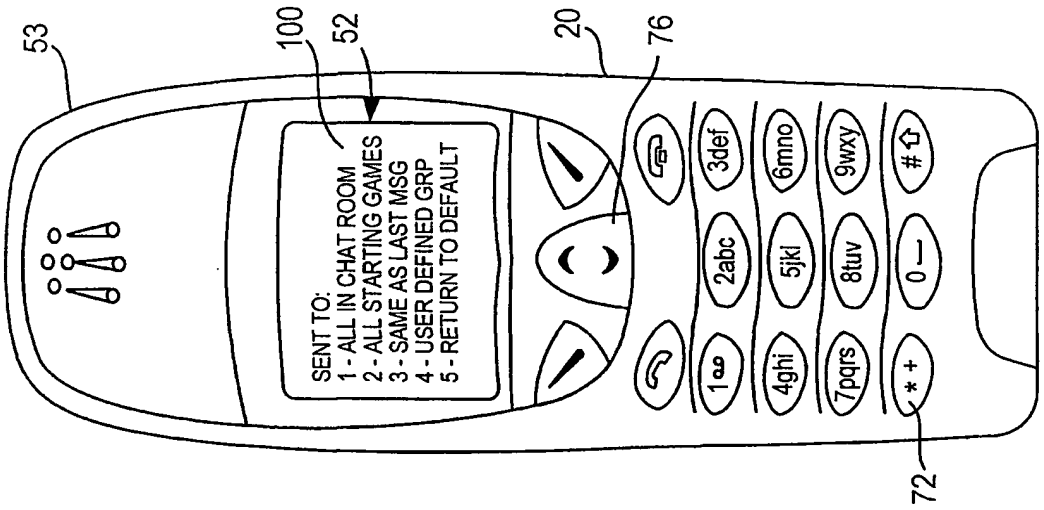

53
100
52
20
76
SENT TO:
1 - ALL IN CHAT ROOM
2 - ALL STARTING GAMES
3 - SAME AS LAST MSG
4 - USER DEFINED GRP
5 - RETURN TO DEFAULT
1
2abc
3def
4ghi
5jkl
6mno
7pqrs
8tuv
9wxy
* +
0
#
72

FIG. 10

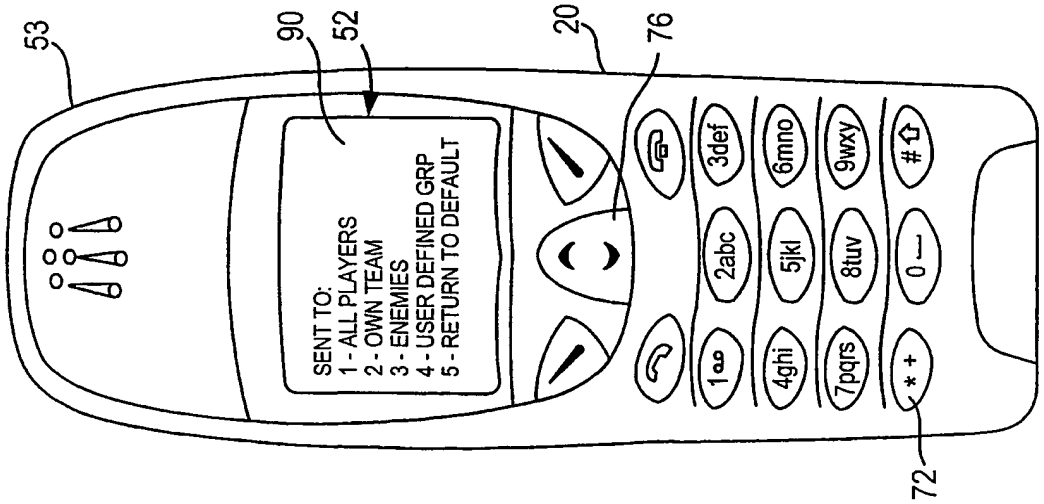

53
90
52
20
76
SENT TO:
1 - ALL PLAYERS
2 - OWN TEAM
3 - ENEMIES
4 - USER DEFINED GRP
5 - RETURN TO DEFAULT
1
2abc
3def
4ghi
5jkl
6mno
7pqrs
8tuv
9wxy
* +
0
#
72

FIG. 9

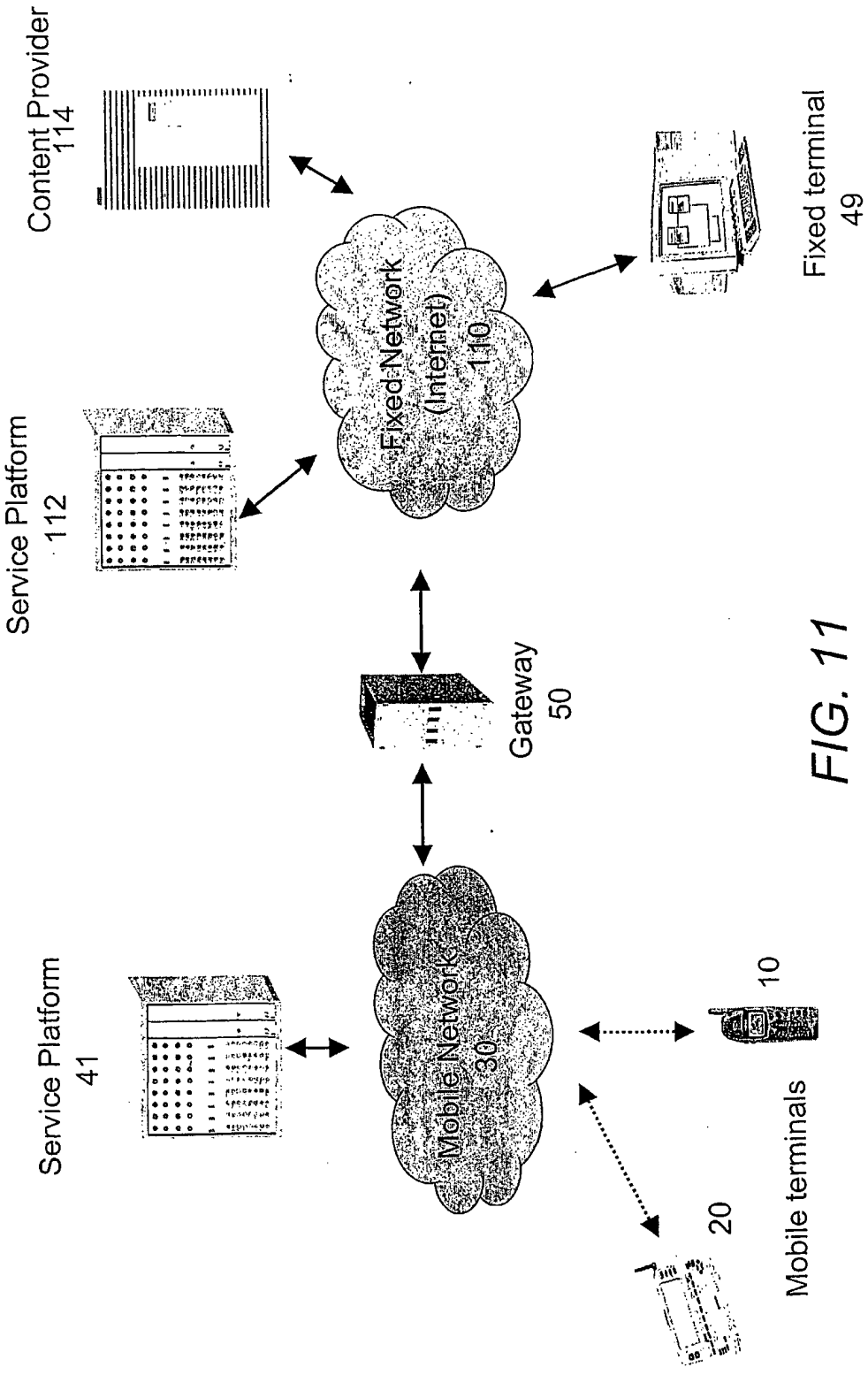

Content Provider
114
Fixed terminal
49
Fixed Network
(Internet)
110
Service Platform
112
Gateway
50
Service Platform
41
Mobile Network
30
10
20
Mobile terminals

FIG. 11

INTERNATIONAL SEARCH REPORT

International application No.
PCT/IB02/00646

A. CLASSIFICATION OF SUBJECT MATTER

IPC(7) :A63F 13/00
US CL :463/40

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

U.S. : 463/39-46, 1-6; 380/251

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

online, east

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y, P	US 6,405,035 B1 (SINGH) 11 June 2002, see entire document	1-33
Y	US 6,028,866 A (ENGEL et al) 22 February 2000, see entire document	1-33
Y, P	US 6,301,471 B1 (DAHM et al) 09 October 2001, see entire document	1-33
Y	US 5,999,808 A (LADUE) 07 December 1999, see entire document	1-33
Y	WO 98/47589 A1 (GAMESCAPE, INC) .9 October 1998, see entire document	1-33
Y	WO 93/23125 A1 (CODEMASTERS LIMITED) 25 November 1993, see entire document	1-33

☐ Further documents are listed in the continuation of Box C. ☐ See patent family annex.

*	Special categories of cited documents:	"T"	later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"A"	document defining the general state of the art which is not considered to be of particular relevance	"X"	document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"E"	earlier document published on or after the international filing date	"Y"	document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"L"	document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	"&"	document member of the same patent family
"O"	document referring to an oral disclosure, use, exhibition or other means		
"P"	document published prior to the international filing date but later than the priority date claimed		

Date of the actual completion of the international search
01 JULY 2002

Date of mailing of the international search report
15 JUL 2002

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Form PCT/ISA/210 (second sheet) (July 1998)★